Atty. Dkt. No. 00CR156/KE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Zogg et al.

Title: SPECTRALLY EFFICIENT APPROACH TO PROTECTION OF KEY ELEMENTS IN A NON-HOMOGENOUS DATA STREAM

Appl. No.: 09/923,081

Filing Date: 08/06/2001

Examiner: Moore Jr., Michael J.

Art Unit: 2616

DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents
Washington, D.C. 20231

Sir:

We, Scott Zogg and Stephen Clark, state and declare that:

1. We are the inventors of claims 1, 3-12, 14 and 16-21 of the patent application identified above.

2. Prior to June 1, 2001, we conceived and reduced to practice in the United States the invention described and claimed in claims 1, 3-12, 14 and 16-21 of the above-referenced application as evidenced by the attached Exhibits A, B and C referenced herein.

3. We created each of Exhibits A, B and C prior to June 1, 2001.

4. Exhibit A is the Innovation Disclosure form which recites the short statement of the problem solved as:

> Many data streams, such as compressed video and voice, contain elements with differing requirements with respect to bit error rate.

In compressed video, for example, corruption of some elements will disrupt an entire video frame or more, while corruption of other elements will only disrupt a small portion of a frame.

State-of-the-art compression techniques account for this difference by applying an error correction code at the application level to provide greater protection for the more valuable elements of the data stream. This technique, however, is inherently an inefficient use of bandwidth because error correction applied at the application level is of necessity a hard decision code. The application layer cannot take advantage of the soft decision capability available only to the lower layers in the communication stack.

5. Exhibit A is the Innovation Disclosure form which recites the solution to the problem as:

Modern communication systems are increasingly required to provide Quality of Service (QoS) negotiation between layers. QoS parameters typically include data rate, latency and error rate. We propose a method whereby the application contains a function that negotiates multiple data streams. These data streams are assigned separate QoS parameters based upon their respective error rate requirements.

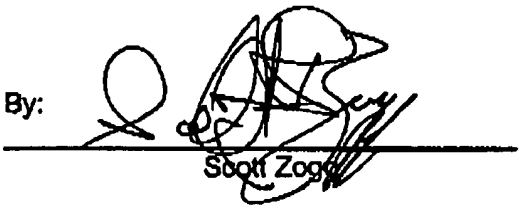
The data link layer can then transmit the various streams of data according to the negotiated QoS. Since the data link layer has full knowledge of the transmit waveform, it can apply advanced signal processing techniques to optimize the coding placed upon each stream based upon the requirements negotiated by the application. At the peer application layer, functionality is provided that re-combines the streams of data into a single stream for use.

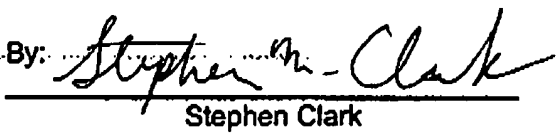
6. Exhibit A also shows a simplified block diagram of the invention.

7. Exhibit B is an internal acknowledgement receipt of the invention.

8. Exhibit C is an internal patent application filing approval letter.

We hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Date 11/15/2006 By: 
Scott Zoge

Date 11/15/2006 By: 
Stephen Clark

INNOVATION DISCLOSURE

No. 00CR156/KE

1. Innovator (Please Print)

Name	Div. Name & Mail Code	Comnet Telephone	Supervisor
Scott Zogg	108-205	295-2373	Bruce Klostor
Steve Clark	108-205 ATS	295-0867	Bruce Klostor

2. Title: A Spectrally Efficient Approach To Protection Of Key Elements in a Non-Homogeneous Data Stream

3. Short statement of problem solved:

Many data streams, particularly compressed data, are made up of elements of differing value to the overall communication. Current techniques protect those elements with inefficient hard decision codes. Soft decision is known to provide 2-5dB better noise & jamming immunity, however, soft decision codecs are not available to the

4. Short statement of your solution (use reverse side, if necessary) or attach existing application descriptive report and drawing:

Attached

5. Status of innovation: X Idea ____ In design ___ Under development ____ Prototype built. Other _____

6. Has any work on the innovation been charged to a Government contract?
X No. Yes, if so G.O. No. _____

7. Product or program in which innovation will be used: Potential Application to Surgical Strike, In-Flight-Network, or any other application that wants to transmit real-time compressed streaming data.

8. Has anyone disclosed or does anyone plan to disclose your innovation outside the Company? X No. Yes, if so when and how: _____

9. Has anyone proposed or does anyone plan to propose a product or program to a customer which includes your innovation? No X. Yes, if so when and how:

10. Innovator's signature: Scott Zogg Date: 5/31/00
Stephen Clark Date: 5/31/00
Date: _____

(D3/R9B

EXHIBIT A

A Spectrally Efficient Approach to Protection of Key Elements in a Non-Homogeneous Data Stream

Problem

Many data streams, such as compressed video and voice, contain elements with differing requirements with respect to bit error rate. In compressed video, for example, corruption of some elements will disrupt an entire video frame or more, while corruption of other elements will only disrupt a small portion of a frame.

State-of-the-art compression techniques account for this difference by applying an error correction code at the application level to provide greater protection for the more valuable elements of the data stream. This technique, however, is inherently an inefficient use of bandwidth because error correction applied at the application level is of necessity a hard decision code. The application layer cannot take advantage of the soft decision capability available only to the lower layers in the communication stack.

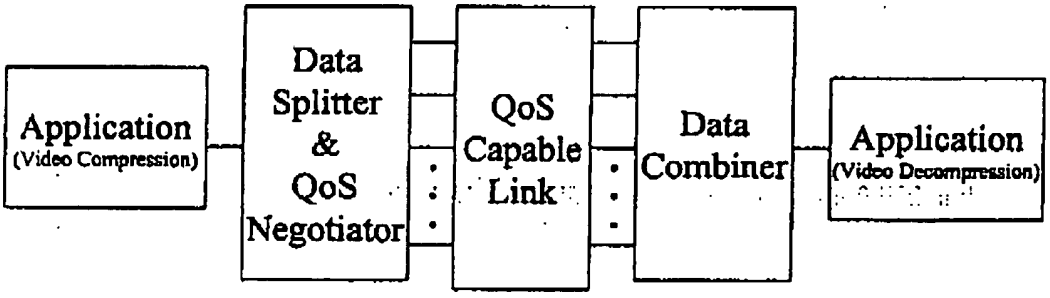
Solution

Modern communication systems are increasingly required to provide Quality of Service (QoS) negotiation between layers. QoS parameters typically include data rate, latency and error rate. We propose a method whereby the application contains a function that negotiates multiple data streams. These data streams are assigned separate QoS parameters based upon their respective error rate requirements.

The data link layer can then transmit the various streams of data according to the negotiated QoS. Since the data link layer has full knowledge of the transmit waveform, it can apply advanced signal processing techniques to optimize the coding placed upon each stream based upon the requirements negotiated by the application.

At the peer application layer, functionality is provided that re-combines the streams of data into a single stream for use.

A simplified block diagram of the invention is shown below:



Rockwell

Internal Letter

Date: June 2, 2000 No.

To: [Name, Organization, Internal Address] S. Zogg 108-205; S. Clark 108-205

From: [Name, Organization, Internal Address, Phone] John W. Koskela M/S 124-323 X-5821

Subject: Docket No.: 00CR156/KE,
"A Spectrally Efficient Approach To Protection Of Key Elements In A Non-Homogenous Data Stream"

This is to acknowledge receipt of the above invention disclosure. The disclosure has been assigned our docket number shown above, and assigned to my docket.

Your invention will be reviewed during the next quarter by the Intellectual Property Committee, which will determine whether a patent application will be filed. In order to properly evaluate your disclosure, the Committee will need the additional information requested in the attached Supplemental Patent Disclosure Information form. Please complete the form and return it to me at your earliest convenience. When the Committee has completed its evaluation, I will inform you of its decision.

The invention disclosure form which you completed requested information regarding past events constituting "statutory bars," i.e. events which would create a deadline for filing a patent application. You should supplement this information in the future by keeping me informed of the occurrence of any of the following events:

1) actual or planned public or commercial use of the invention by Rockwell or others;

2) any printed publication by you or others describing the invention or anything similar to it; or

3) any proposal to sell equipment incorporating the invention or to add the invention to equipment under an existing contract.

I will contact you if I need additional information after reviewing your disclosure in more detail. Please feel free to contact me if you have any questions.

Two new invention disclosures are enclosed for future disclosures. Please pass one along to a colleague.

John W. Koskela
Intellectual Property Department

JWK/cm

cc: B. Kloster 108-205**W/O Attachments**

EXHIBIT B

Internal Letter

Kyle Eppele
Intellectual Property Department
124-323
VPN 295-8280

Rockwell

Date: July 12, 2000

To: (Name, Organization, Mailing Address)
S. Zogg 108-205
S. Clark 108-205

Subject: Docket No.: 00CR156/KE,
"A Spectrally Efficient Approach To Protection Of Key Elements In A Non-Homogenous Data Stream"

The above disclosure was recently evaluated by the Patent Assets Committee, in light of the criteria established by Corporate Policy B-04, and it decided to authorize the filing of a patent application, subject only to a search of the prior art.

When that search has been completed, I will contact you for further information necessary in preparation for the filing of the application. In the meantime, please feel free to contact me if you have any questions, comments or additional information relating to your disclosure.

Kyle Eppele
Intellectual Property Counsel

/lm

EXHIBIT C